

REMARKS/ARGUMENTS

The amendment to Claim 1 is supported by the claim as originally filed and by the original specification. New Claim 45 is supported at specification page 4, line 32 - page 5, line 10. New Claim 46 is supported at specification page 5, line 15 - page 6, line 13. No new matter has been entered.

The claims pending herein are free of the prior art, the application already having undergone extensive examination.

The Examiner now rejects the claims under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention, and as failing to comply with the enablement requirement, the claims containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These rejections are traversed.

First, it is again noted that the claims are free of the prior art. As such, Applicants are entitled to broad claims, commensurate in scope with the broad invention as disclosed. *See In re Kamal & Rogier, 158 USPQ 320, (CCPA 1968)*, attached, which addresses several of the Examiner's concerns as expressed herein with regard to both the number and type of organic substances comprising at least one ethylenic double bond and the nature of the iodinated organic substances disclosed herein. As the summary of the case states:

Although there are many polyfunctional organic compounds containing labile hydrogens that have not been specifically named in specification, disclosure of that extent is not required by 35 U.S.C. 112; applicants' disclosure, which includes a description of broad functional groups, broad classes of polyfunctional compounds, 33 specific compounds, and 15 working examples is legally sufficient; fact that applicants' invention is not the polyfunctional organic compound per se but resides instead in the combination of this class of compounds with a novel polyisocyanate makes this extensive disclosure adequate.

The Examiner criticizes the claim term “iodinated organic substances” as being unclear. However, and as is explained fully in the present specification, the present invention relates to a *process* for preparing iodinated organic substances whose particular identity necessarily depends upon and follows from the reactants used in the specified process. As one of the reactants is an organic substance comprising at least one ethylenic double bond, it is absolutely clear to those of ordinary skill in this art that it is this organic substance that becomes iodinated during the course of the presently claimed process. That is, iodine is added to the organic substance. As the present invention relates to a process for preparing iodinated organic substances, it is perfectly appropriate to use such language in describing the product of Applicants’ process in the claims herein.

The Examiner unnecessarily criticizes Applicants for not providing more detail with regard to the specific, exact structure of their iodinated products. In the first instance, Applicant has provided such detail. See, e.g., specification page 16, lines 9ff. However, such detail is not required by the patent statute: Applicants have provided a process for making iodinated organic substances that find use as initiators for controlled free-radical polymerization. See specification page 1, lines 30-32. While the Examiner’s curiosity with regard to the exact structure of the final product of the claimed process is understandable, Applicant need not commit themselves to an arduous analytical expedition to satisfy this curiosity. Nevertheless, and as detailed in their several Examples, they *have* provided reliable indicators denoting to one of ordinary skill in the art the success of the presently claimed process, and the products produced thereby, and as such have gone beyond anything required under U.S. law.

The Examiner also criticizes reactant (B) herein - “at least one organic substance comprising at least one ethylenic double bond, capable of adding a free radical to its ethylenic double bond” - as indefinite. This objection is baseless, first because those of ordinary skill

in the art understand what ethylenic double bonds are, whether an organic substance comprises one or not, and whether it is capable of adding a free radical, and second because the present specification provides more than two pages of description of examples thereof, beginning at specification page 4, line 32 ff. In view of the specification description of this substance, and the numerous Examples thereof specifically provided by Applicants, one of ordinary skill is apprised of the scope and meaning of this term sufficient to both make and use the invention as presently claimed.

As noted in *Kamal & Rogier*, where the issue was whether Applicant had sufficiently described “a polyfunctional organic compound containing labile hydrogen atoms” the Court noted:

Appellants concede that there are many polyfunctional organic compounds containing labile hydrogens that have not been specifically named in appellants’ specification. But a disclosure of that extent is not required by the statute. As stated by this court in *In re Grimme*, 47 CCPA 785, 274 F.2d 949, 124 USPQ 499, 501 (1960):

* * * It is manifestly impracticable for an applicant who discloses a generic invention to give an example of every species falling within it, or even to name every such species. It is sufficient if the disclosure teaches those skilled in the art what the invention is and how to practice it. * * *

We thus believe that appellants’ disclosure, which includes a description of broad functional groups, broad classes of polyfunctional compounds, thirty-three specific compounds and fifteen working examples is legally sufficient.

As Applicants’ specification provides an extensive description of their reactant (B) organic substance comprising at least one ethylenic double bond, capable of adding a free radical to its ethylenic double bond, by providing numerous specific examples thereof, and provides those of ordinary skill in the art with more than ample guidance as to how to accomplish the presently claimed process by reacting this compound with at least one free-radical-generating substance (A) and molecular iodine (C) under conditions as specified in the claims, it is clear that the requirements of 35 U.S.C. 112 have been met.

Finally, the Examiner objects to the present claims as failing to meet the enablement requirement. While the Examiner notes that the claims are broad with respect to the scope of starting material and product that can be produced by the claimed process, Applicants again stress that they are entitled to such scope in the absence of prior art, as the scope of the pending claims matches the scope of the present invention as described in the specification. Determining whether an inorganic substance has been iodinated or not is a simple matter, and Applicants have shown those of ordinary skill in the art how to determine whether such iodination has taken place. See, e.g., specification page 16, lines 17 ff and Figure 1 herein which shows the size exclusion chromatogram of the products of Example 1 herein and identifies the structure of the products produced. Thus, the presently claimed process is easy to set up and run, and it is easy to determine whether the product(s) sought, an iodinated organic substance having a molecular mass of less than 2,000, are obtained.

While it may be tedious and repetitious to determine, on a case-by-case basis whether a particular organic substance comprising at least one ethylenic double bond not specifically listed in the present specification undergoes iodination according to the present invention process, the fact that one of ordinary skill in the art may be bored in so doing does not mean that the amount of experimentation necessary is “undue.” In fact, performing experiments that are normal and routine in the art supports a conclusion that the amount of effort required is *not* “undue.” Again, Applicant need not provide the exact structure of their reactant or iodinated product in the claim, or describe each and every specie under the sun that is useful in the invention process, in order to provide a full description of the presently claimed process. The rejection should be withdrawn.

Application No. 10/553,993
Reply to Office Action of August 20, 2009

Accordingly, and in view of the above, and particularly in view of the fact that the presently claimed invention is free of the prior art, Applicants respectfully request the reconsideration and withdrawal of all outstanding rejections, and the passage of this case to Issue.

Respectfully submitted,

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In re KAMAL AND ROGIER, 158 USPQ 320 (C.C.P.A. 1968)

158 USPQ 320
In re KAMAL AND ROGIER
U.S. Court of Customs and Patent Appeals
No. 7964
Decided July 3, 1968
398 F2d 867

Headnotes

PATENTS

[1] Claims — Broad or narrow — In general (► 20.201)

Applicants are entitled to broad claims commensurate with broad invention as disclosed. — In re Kamal & Rogier (CCPA) 158 USPQ 320.

[2] Specification — Sufficiency of disclosure (► 62.7)

Although there are many polyfunctional organic compounds containing labile hydrogens that have not been specifically named in specification, disclosure of that extent is not required by 35 U.S.C. 112; applicants' disclosure, which includes a description of broad functional groups, broad classes of polyfunctional compounds, 33 specific compounds, and 15 working examples is legally sufficient; fact that applicants' invention is not the polyfunctional organic compound per se but resides instead in the combination of this class of compounds with a novel polyisocyanate makes this extensive disclosure adequate.—In re Kamal & Rogier (CCPA) 158 USPQ 320.

[3] Evidence — Judicial notice (► 36.20)

It is improper for Board to judicially notice "inoperability" of species of compounds within bounds of claim since it cannot be common knowledge that certain compounds will react with novel polyisocyanate to yield products not desired by applicants, since applicants are the first persons to react such compounds with their new polyisocyanate.—In re Kamal & Rogier (CCPA) 158 USPQ 320.

[4] Claims — Broad or narrow — In general (► 20.201)

Possibility of inclusion of inoperative substances does not prevent allowance of broad claims.—In re Kamal & Rogier (CCPA) 158 USPQ 320.

Particular Patents

Particular patents—Polyisocyanates

Kamal and Rogier, Polyisocyanates and Derivatives, claim 7 of application allowed. — In re Kamal & Rogier (CCPA) 158 USPQ 320.

Case History and Disposition

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Appeal from Board of Appeals of the Patent Office.

Application for patent of MarwanR. Kamal and EdgarR. Rogier, Serial No. 250,211, filed Jan. 9, 1963; Patent Office Group 140. From decision rejecting claim 7, applicants appeal. Reversed.

Attorneys

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JOSEPH SCHIMMEL (RAYMOND E. MARTIN of counsel) for Commissioner of Patents.

Judge

Before WORLEY, Chief Judge, RICH, SMITH, and ALMOND, Associate Judges, and KIRKPATRICK, Judge. *

* Senior District Judge, Eastern District of Pennsylvania, sitting by designation.

Opinion Text

Opinion By:

SMITH, Judge.

The sole issue involved in this appeal from the Patent Office Board of Appeals ¹is whether the claim on appeal complies with the requirements of 35 U.S.C. 112, second paragraph.

¹ The board consisted of Messrs. Magil, Lidoff, and Mangan, Examiners-in-Chief. Mr. Lidoff wrote the opinion.

That issue arises in an appeal from the decision of the board, adhered to *on reconsideration*, affirming the examiner's rejection of claim 7 of appellants' application. ²All of the remaining claims in the application were allowed.

² Application Serial No. 250,211, filed January 9, 1963, for "Polyisocyanates and Derivatives."

The claim here contended for is:

7. A polymer prepared by reacting the compound of claim 1 with a polyfunctional organic compound containing labile hydrogen atoms.

The compound of claim 1, which the Patent Office found patentable, is:

1. A compound having the formula:

Graphic material consisting of a chemical formula or diagram set at this point is not available. See text in hard copy or call BNA at 1-800-372-1033.

where y is an integer selected from 0 and 1, x is an integer of 2 to about 4 and R is the hydrocarbon group of polymeric fat acids $R(COOH)_x$, said polymeric fat acids having been prepared by polymerizing fat acids of 8-24 carbon atoms.

Appellants' specification begins:

This invention relates to novel polyisocyanates and polymers prepared from such polyisocyanates. More particularly, the present invention relates to new polyisocyanates derived from polymeric fat acids and to polymers prepared from such polyisocyanates

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and polyfunctional organic compounds containing labile hydrogen atoms. (Emphasis added.)

After describing the polyisocyanates of the invention, and the methods of preparing them, that written description of the invention further describes certain polymers prepared by reacting the polyisocyanates of the invention with polyfunctional organic compounds containing labile, or active, hydrogen atoms. In the words of the specification:

The polyisocyanates of the present invention can be handled with unexpected ease. Thus they are characterized by very low toxicity and have a long shelf life due to their slow reactivity with moisture. They are particularly useful for preparing polymers from polyfunctional organic compounds containing labile hydrogen atoms. We have found that condensation polymers of our polyisocyanates and amines can be prepared without difficulty. The reactions of other isocyanates such as aromatic diisocyanates and amines are extremely difficult to control. Also, the polymers prepared according to our invention have good flexibility and are easily molded. Polyureas and polyurethanes prepared from our polyisocyanates are tough and absorb only extremely low amounts of water.

The polyfunctional organic compounds containing active hydrogen atoms can be selected from a wide variety of materials. These compounds contain groups such as -OH, -NH₂, -NRH, -COOH, -SH and the like. Examples of such reactants are diols, polyfunctional phenols, diamino compounds, diacids, dithiols and the like. Compounds containing mixed functional groups can also be used such as hydroxycarboxylic acids, aminoalcohols, aminoacids and the like. Representative polyfunctional organic compounds include: ethylene glycol, diethylene glycol, trimethylene glycol, tetramethylene glycol, hexamethylene glycol, decamethylene glycol, 1,5-pentanediol, 1,4-hexanediol, resorcinol, pyrocatechol, p, p'-dihydroxydiphenyl, pyrogallol, decamethylene dithiol, thioresorcinol, ethylene dithiol, phthalic acid, adipic acid, hexamethylene diamine, trimethylene diamine 1,3-diaminobutane, tetramethylene diamine, phenylene diamine, toluene diamine, xylylene diamine, ethanolamine, N-phenyldiethanolamine, 2 amino-1-butanol, triethanolamine, 12-hydroxydecanoic acid, piperazine, bis-(hydroxymethyl) durene, 2,4-dinitrophenyl hydrazine, phenyl hydrazine, and the like.

The specification continues with fifteen specific working examples describing the production of certain members of the class of polymers defined in claim 7. These polymers, appellants state, are useful as molding compounds, adhesives, in the preparation of laminates and the like.

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With this somewhat detailed background of the invention, we shall now turn to the issues as framed by the examiner and the board. We have found it helpful to discuss various aspects of the board's reasoning separately, while bearing in mind that but a single statutory basis for the rejection exists.

A recurring theme in the examiner's reasoning was that appellants lacked the "concept" or "contemplation" of certain compounds. He thought the term "polyfunctional organic compound" was too broad since "compounds such as polyakylene ether glycols, which though *probably operable*, are not recited in the disclosure and obviously, therefore, are not *contemplated*." [Emphasis added.] At another point, the examiner thought claim 7 was so "vague and indefinite" that it read upon compounds "such as Vitamin A and ribonucleic acid which have replaceable hydrogen atoms, but are not contemplated by this invention." The examiner expressly stated, however, that he was not asking for a specific working example of all the compounds "used or contemplated" and that he was *not challenging the operability* of any compound to react with appellants' isocyanate.

In his Answer, he indicated that the basis for the rejection is 35 U.S.C. 112 and that appellants failed to define properly the nature of the invention in accordance with the requirements of the statute. Thus, the claim has been rejected on the ground of "being vague, indefinite and too broad."

There, the examiner reiterated many of the grounds for his rejection and, in addition, stated:

* * * Rather he [the examiner] is saying that the specification is *lacking as to the concept* of using certain of these generic classes with the new isocyanate, and because of this failure appellants are not entitled to the use of broad language which would encompass and read on such materials * * * [Emphasis added.]

Moreover, the examiner stated:

The honorable Board should note that *the examiner is not challenging the operability* of such materials, namely the polyethers, polyesters, polyformals etc. to react with the isocyanate. *Rather he is questioning the conception* by the inventors of the interaction of them with their isocyanate. [Emphasis added.]

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To this the examiner added the following additional contention:

A short analysis of the term [polyfunctional organic compound containing labile hydrogen atoms] is in order. It is to be noted that there is no limitation that the compound must contain only carbon, hydrogen, sulfur, oxygen and nitrogen, the most common elements of organic compounds. Presently it can contain boron, phosphorous, selenium and many other moieties, *none of which are contemplated* by the specification. There is also lacking an indication as to how many labile hydrogens are present. The other functionality could be other than labile hydrogen, such as an epoxide ring which could split open. It is not even indicated that the compound must be suitable for preparing a polyurethane. * * * [Emphasis added.]

The board stated its full agreement with the examiner's rejection of the appealed claim "as failing to comply with the provisions of 35 U.S.C. 112." The board, however, attempted to clarify what it termed "an apparent misunderstanding" as to the examiner's position:

* * * The examiner did not state that the appealed claim did not cover inoperative subject matter, but indicated that he did not challenge the operability of such materials as polyethers, polyesters, and polyformals in the reaction with isocyanates.

We must agree with the examiner that the disclosure is not properly representative of all the classes of polyfunctional organic compounds containing labile hydrogen atoms and, therefore, the

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specification does not support the tremendously broad terminology. Included therein are numerous reactants which, while they may react with the isocyanate, would do so to produce polymers not exhibiting the properties of appellants' products, namely, flexibility and moldability. Included are reactants which cause cross-linking as well as reactants of classes entirely foreign to, not related to the labile hydrogen-containing reagents exemplified.

We have indulged in this formulation of the position below to point out the difficulties in evaluating a rejection based upon 35 U.S.C. 112 when the particular statutory language is not explicitly relied upon.

In evaluating this rejection, we would first observe that the "written description of the *invention*, " 35 U.S.C. 112 (first paragraph), discloses two aspects of appellants' invention: a polyisocyanate compound, and a polymeric reaction product produced by the chemical combination of that polyisocyanate compound and a polyfunctional organic compound containing labile hydrogen atoms. Portions of appellants' specification, i.e., the written description of the invention, as filed, indicate the breadth of the subject matter which appellants regarded as their invention. Thus, there can be no question that the claims are "too broad" in the sense of embracing a "concept which was not stated in the original disclosure" of the invention in appellants' specification. *In re Cavallito*, 48 CCPA 711, 282 F.2d 357, 127 USPQ 202 (1960).

Second, we observe from this record that the terminology used by appellants in the appealed claim is not in question and that compounds falling within the terminology of claim 7 are well known in the art as illustrated in a number of United States patents.³

³ Hanford et al. 2,284,896 June 2, 1942; Rothrock 2,374,136 Apr. 17, 1945; Schultheis et al. 3,012,991 Dec. 12, 1961; Britain 3,054,757 Sept. 18, 1962; Merten et al. 3,055,845 Sept. 25, 1962.

Each of the cited patents indicates that terminology such as "organic compound containing labile or active hydrogens" is conventional language in this art, which apparently is well understood by those of ordinary skill. In addition, the examiner has conceded that the terminology is conventional.

Thus, analyzing appellants' *invention*, it rests in the reaction combination of a particularly defined compound, of claim 1, and a polyfunctional, organic compound containing labile hydrogen atoms. Accordingly, we must conclude that there is nothing amiss in the *form* of the claim, and that one of ordinary skill in this art would be apprised of the scope of the claim in view of the terminology there used. See *In re Hansen*, 51 CCPA 1447, 332 F.2d 825, 141 USPQ 803 (1964). It is neither "vague" nor "indefinite."

[1] To the extent that the board *affirmed* the examiner on the ground that the appellants' written description of his invention is not "properly representative of all the classes of polyfunctional organic compounds containing labile hydrogen atoms," we disagree with that decision. From this record, and in the absence of prior art, appellants are the first to discover the polyisocyanate of claim 1. They also appear from this record to be the first to have reacted the

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polyisocyanate of claim 1 with a polyfunctional organic compound containing labile hydrogen atoms. This seems to us to be a *broad* invention, see *In re Boller*, 51 CCPA 1484, 332 F.2d 382, 141 USPQ 740, 743 (1964), which entitles appellants to claims commensurate with that broad invention as disclosed. *In re Sus*, 49 CCPA 1301, 306 F.2d 494, 134 USPQ 301 (1962).

[2] Appellants concede that there are many polyfunctional organic compounds containing labile hydrogens that have not been specifically named in appellants' specification. But a disclosure of that extent is not required by the statute. As stated by this court in *In re Grimme*, 47 CCPA 785, 274 F.2d 949,

124 USPQ 499, 501 (1960):

* * * It is manifestly impracticable for an applicant who discloses a generic invention to give an example of every species falling within it, or even to name every such species. It is sufficient if the disclosure teaches those skilled in the art what the invention is and how to practice it. * * *

We thus believe that appellants' disclosure, which includes a description of broad functional groups, broad classes of polyfunctional compounds, thirty-three specific compounds and fifteen working examples is legally sufficient. The fact that appellants' invention is not the polyfunctional organic compounds, per se, but resides instead in the *combination* of this class of compounds with the novel polyisocyanate makes this extensive disclosure adequate to comply with the section 112 requirements. See *In re Cavallito*, supra.

Moreover, we think the board's criticism that the terminology of the claim is such that it include numerous reactants which, while they may react with the isocyanate, would produce polymers not exhibiting the properties of appellants' products, is unwarranted. While the board confined its comment to the properties of flexibility and moldability of the resultant product, as disclosed in the specification, we observe that the working examples illustrating the preparation of the polymers are not so restricted.

Examples I to XV illustrate, among other things, that the polymers may be easily molded and in some instances are flexible, as in Examples I, II and IV; that the polymers are flexible but somewhat brittle, as in Example V; rubbery, as in Examples VI and VII; relatively brittle, as in Examples VIII, IX and XI; or even tacky, as in Example XIV.

The solicitor argues, on this issue, that claim 7 is broad enough to include polyfunctional compounds which would be expected to be inoperable for appellants' purposes. He states that the possible existence of compounds falling within the scope of the claim, but not having the utility set forth in appellants' specification, may properly be considered in connection with a rejection on undue breadth, citing *In re Cavallito*, supra.

While it has been held in *In re Cavallito*, supra, and in *In re Surrey*, 54 CCPA 855, 370 F.2d 349, 151 USPQ 724, 730 (1966), that "the possible existence of compounds falling within the scope of the claims, but not having the utility set forth in appellant's specification, may properly be considered in connection with a rejection on undue breadth," those cases are distinguishable from the present situation. Both involved claims to pharmaceutical compounds, whose utility depended in large part upon their acceptance by the human body, while appealed claim 7 is directed to polymeric materials, which are to be used as molding compounds, adhesives, in laminates, and the like. The use of polymeric materials in this capacity is art-recognized and does not involve the unpredictability before the court in those cases.

In *In re Riat*, 51 CCPA 1031, 327 F.2d 685, 140 USPQ 471, 473, the court distinguished *In re Cavallito*, stating:

Whether a disclosure gives reasonable assurance that all of the compounds embraced by the claims would be useful for the purposes intended must be determined by the particular circumstances of each case, including the nature of the compounds per se and the supporting disclosure. Here, in contrast to *Cavallito* which involved pharmaceutical compounds where unpredictability is particularly notorious, we are concerned with azo dyestuffs which constitute an art-recognized genus. We find no suggestion in the record of any compound encompassed by the generic claims which would not be a dyestuff. Both of the appealed claims are drawn to azo dyes and the examiner stated that "azo dyes are well known."

[3] Moreover, despite appellants' specific request for evidence of the factual basis for the board's decision, the board has provided no such evidence. We think it improper for the board to, in effect, judicially notice the "inoperability" of species of compounds within the bounds of claim 7. It is not, and cannot be "common knowledge" that certain polyfunctional organic compounds containing labile hydrogen

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atoms will react with the novel polyisocyanate defined by claim 1 to yield products not desired by appellants, since, by this record, appellants are

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the first persons to react such compounds with their new polyisocyanate. See *In re Spormann*, 53 CCPA 1375, 363 F.2d 444, 150 USPQ 449 (1966); *Bray v. Tears*, 26 CCPA 1103, 102 F.2d 877, 41 USPQ 321 (1939).

[4] Furthermore, the mere possibility of inclusion of inoperative substances, if, indeed, operability is properly questionable under 35 U.S.C. 112, does not prevent allowance of broad claims. *In re Sarett*, 51 CCPA 1180, 327 F.2d 1005, 140 USPQ 474 (1964).

Based upon the foregoing, the decision of the board is reversed.

WORLEY, Chief Judge, did not participate.

- End of Case -